Clean Set of Claims

C1

10. A composition to be added to a cell mass containing nucleic acid, for the recovery of RNA and/or DNA without addition of protease, ribonuclease, carbohydrases or other enzymes, said composition comprising a mixture of combined reagents, one of which comprises lysing means for releasing DNA from cells, and one of which comprises precipitating means having small, cationic molecules which bind in either the major or minor grooves of a double-stranded RNA or DNA molecule reducing the volume occupied by the nucleic acid which precipitates DNA comprising less than about 0.1 Units endotoxin per microgram plasmid DNA (EU/μg or IE/μg)

C2

19. A biotech kit comprising reagent for recovering DNA and/or RNA from lysates or synthetic mixtures containing PCR products, oligonucleotides, and other nucleic acids resulting from synthetic syntheses, without addition of protease, ribonuclease, carbohydrases or other enzymes, by adding to a culture both lysing means which releases nucleic acids and compaction agent which selectively precipitates DNA or RNA and other reagents and apparatus designed for the purification of nucleic acids comprising filter means, means for centrifugation, or adsorbent means.

20. A kit according to Claim 19 comprising parallel mini-prep apparatus for simultaneously treating a plurality of cell masses.

21. A purification kit for selectively recovering nucleic acid without addition of protease, ribonuclease, carbohydrases or other enzymes, the kit consisting essentially of:

A. a lysis solution comprising detergent,

B. a resuspension solution comprising a low ionic strength solution for resuspension of a nucleic acid, which preferably effects a pH shift.

C. compaction agent-based selective precipitation solution comprising small, cationic molecules which bind in either the major or minor grooves of a double-stranded RNA or DNA molecule reducing the volume occupied by the nucleic acid;

D. a stripping solution comprising salt and alcohol; and

E. optionally a final resuspension solution

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22. A purification kit for total RNA according to Claim 21 consisting essentially of a lysis solution; a 1st compaction precipitation solution (which may be optionally combine with the lysis solution); a 2nd compaction precipitation solution; a stripping solution; and optionally a final resuspension solution.

23. A purification kit for chromosomal or genomic DNA according to Claim 21 consisting essentially of a lysis solution or solutions, a resuspension solution, a compaction agent-based precipitation solution, a stripping solution, and optionally a final resuspension solution.

24. A purification kit for large RNA fragments according to Claim 21 consisting essentially of a lysis solution; a 1st compaction precipitation solution (which may optionally be combined with the lysis solution); a 2nd compaction precipitation solution; a stripping solution; and optionally a final resuspension solution.

25. A purification kit for low molecular weight RNA fragments according to Claim 21 consisting essentially of a lysis solution; a 1st compaction precipitation solution (which may be optionally combine with the lysis solution); a 2nd compaction precipitation solution; a 3rd compaction precipitation solution; a stripping solution; and optionally a final resuspension solution.

C2 CONT.

26. A large-scale plasmid DNA purification kit according to Claim 21 consisting essentially of the lysis solutions, a resuspension solution, a compaction agent-based precipitation solution, a stripping solution and optionally a final resuspension solution.

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28. A biotech kit according to Claim 21 additionally comprising filtration means to enhance the speed and usability of the preparations using the kit.

29. A kit according to Claim 19 designed to produce as product a composition of matter comprising DNA, substantially free of added nucleases, and containing less than about 3% by weight RNA.

C3

30. A kit according to Claim 22 designed to produce as product a composition of matter comprising RNA substantially free of added nucleases, and containing less than about 3% by weight DNA.

31. A kit according to Claim 19 wherein the compaction agent is selected from the group consisting of: basic polypeptides, polyamines, trivalent and tetravalent metal ions.

32. A kit according to Claim 22 wherein the compaction agent is selected from the group consisting of: basic polypeptides, polyamines, trivalent and tetravalent metal ions.

33. A kit according to Claim 21 wherein the compaction agent is selected from the group consisting of: basic polypeptides, polyamines, trivalent and tetravalent metal ions (i.e. hexammine cobalt, chloropentammine cobalt, chromium (III)), netropsin, distamycin, lexitropans, DAPI (4', 6 diamino 2-phenylindol), berenil, pentamidine, and manganese chloride.

34. A kit according to Claim 21 wherein the compaction agent is selected from the group consisting of: polylysine, protamine, spermidine, spermine, cadaverine hexammine cobalt, chloropentammine cobalt, chromium (III)), netropsin, distamycin, lexitropans, DAPI (4', 6 diamino 2-phenylindol and manganese chloride.

C3 Cont.

35. A kit according to Claim 21 additionally comprising means for purification selected from the group consisting of: use of French cell press, addition of nonionic detergent, lysozyme addition, microfluidizer, freeze-thaw or any other low ionic strength lysis technique to produce nucleic acid free lysates for later protein recovery.

36. A kit according to Claim 21 wherein the resuspension reagent comprises a chelating agent select from the group consisting of:

EGTA, EDTA (ETHYLENEDIAMINETETRAACETIC ACID),
Nitrilotriacetic acid, NTA: N(CH2COOH)3,
Hydroxyethylethylenediaminetriacetic acid,

HEDTA:=20 (HOOCH2C)2NCH2CH2N(CH2COOH)(CH2CH2OH)
Diethylenetriaminepentaacetic acid,
DTPA:=20
(HOOCH2C)2NCH2CH2N(NCH2COOH)CH2CH2N(CH2COOH)2
1,2-Diaminopropanetetraacetic acid, 1,2-PDTA
(HOOCH2C)2NCH(CH3)CH2N(CH2COOH)2
1,3-Diaminopropanetetraacetic acid, 1,3-PDTA:
(HOOCH2C)2NCH2CH2CH2N(CH2COOH)2
2,2=B4-Ethylenedioxybis[ethyliminodi(acetic acid)], EGTA:=20
(HOOCH2C)2NCH2CH2OCH2CH2OCH2CH2N(CH2COOH)2
Bis(carboxymethyl)diaza-18-crown-6,
(HOOCH2C)N(CH2CH2OCH2CH2OCH2CH2)2N(CH2COOH)
1,10-bis(2-pyridylmetyl)-1,4,7,10-tetraazadecane, BPTETA:=20
(C6H4N)CH2NHCH2CH2NHCH2CH2NHCH2CH2NHCH2(C6H4N)
and similar chelating agents and combinations of the above components; and the kit additionally comprises spinfilter means, means for centrifugation, or adsorbent means.

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37. A kit according to Claim 21 additionally comprising apparatus means for conducting a further separation step comprising one or more techniques selected from the group consisting of: precipitation and resuspension, filtration and adsorption, for production of more pure product.

C4

38. A kit according to Claim 21 comprising parallel mini-prep apparatus for simultaneously treating a plurality of cell masses.